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Claims

[c1] 1. Lifting apparatus for lifting and lowering a load, having

a) a lifting drum;

b) a drive, by which the lifting drum can be set in rotation in both directions;

c) at least two bands, serving as pulling means, which are secured by one end to the lifting drum and at the other end carry a holding device for the load;

d) the bands being able to be wound up on the lifting drum, by rotation of the latter, in such a way that one turn lies above the other;

characterised in that

e) at least two bands can be wound up on the lifting drum with accurate tracking and so as to lie one above the other.

[c2] 2. Lifting apparatus according to Claim 1, characterised in that the lower ends of the bands are connected to a holding device for the load, which is configured as a compensating device for the varying length, on winding up and unwinding, of the unwound part of the bands (lying one above the other on the lifting drum.

[c3] 3. Lifting apparatus according to Claim 2, characterised in that two bands can be wound up on the lifting drum with accurate tracking and so as to lie one above the other, and in that the holding device comprises a rocker element which connects the lower ends of the two bands to one another, and in that the rocker element has, between the points at which the force is introduced by the bands, a fastening device for the load.

[c4] 4. Lifting apparatus according to Claim 3, characterised in that the lower ends of the bands are secured in clamping pieces articulated in opposite regions of the rocker element.

[c5] 5. Lifting apparatus according to Claim 2, characterised in that three bands can be wound up on the lifting drum with accurate tracking and so as to lie one above the other, in that the two outer bands are connected to one another and the holding device comprises a deflection roller which is carried by the middle band and around which the connection between the two outer bands is guided.

[c6] 6. Lifting apparatus according to Claim 5, characterised in that the lower ends of the two outer bands are connected to one another by a piece of rope or chain which

is guided around the deflection roller.

[c7] 7. Lifting apparatus according to Claim 2, characterised in that four bands can be wound up on the lifting drum with accurate tracking and so as to lie one above the other, in that the lower ends of the first pair of adjacent bands and the lower ends of the second pair of adjacent bands are connected to one another, and in that the holding device comprises:

a) a rocker element;

b) a first deflection roller, around which the connection of the lower ends of the first pair of bands is guided and which is mounted in one end region of the rocker element;

c) a second deflection roller, around which the connection of the lower ends of the second pair of bands is guided and which is mounted in the opposite end region of the rocker element;

d) the rocker element, at a point lying between the points at which the deflection rollers are mounted, having a fastening device for the load.

[c8] 8. Lifting apparatus according to Claim 7, characterised in that the connections of the lower ends of the two pairs of bands are pieces of rope or chain.

[c9] 9. Lifting apparatus according to Claim 1, characterised

in that the bands are provided with a friction-reducing coating on at least one side.

[c10] 10. Lifting apparatus according to Claim 1, characterised in that at least one spacer element, on which the first turn of the radially innermost band can come to bear before reaching the step formed by the ends of the bands, is provided on the circumferential surface of the lifting drum.

[c11] 11. Lifting apparatus according to Claim 1, characterised in that the bands consist of metal, in particular of steel.